

Claims

1. A method of in situ monitoring and dispersing unwanted particles in slurry used during CMP polishing, said method comprising:
 - providing a slurry path,
 - applying to said slurry path a microcavitation field of a first level to detect particles of a predetermined size,
 - applying to said slurry path a microcavitation field of a second level that is capable of dispersing said particles, and
 - after said second applying step, feeding slurry of said slurry path to a CMP polishing unit.
2. The method of claim 1, further including detecting particle size after said first applying step.
3. The method of claim 1, further including:
 - setting an energy level of said microcavitation field in at least one of said first and second applying steps according to particle size.
4. The method of claim 3, further including calibrating said energy level according to levels determined by inducing microcavitation using control particles of a known size and/or concentration.
5. The method of claim 1, wherein said first and second applying steps are performed using a single transducer.
6. A method of dispersing agglomerates in slurry used during CMP polishing comprising applying to said slurry a cavitation field of sufficient level to disperse agglomerates above a predetermined size prior to using said slurry.
7. The method of claim 6, further including detecting particle size of said agglomerates.
8. The method of claim 6, further including setting an energy level prior to said applying step according to particle size.

9. The method of claim 8, further including calibrating said energy level according to known energy levels determined by inducing microcavitation with particles of a known size and/or concentration in a liquid insonification medium.
10. An apparatus to carry out in situ monitoring and dispersion of particles in slurry used during CMP polishing, said apparatus comprising:
- a conduit that provides a slurry path,
 - a transducer that applies to said slurry path a cavitation field of a first level to enable detection of particles of a predetermined size and a cavitation field of a second level that is capable of dispersing said particles, and
 - a CMP polishing unit that receives said slurry after being subjected to said cavitation field.
11. The apparatus of claim 10, further including a detector to detect particle size based on the first level of said cavitation field.
12. The apparatus of claim 10, further including:
- a controller to set the energy level of at least one of said first and second levels according to particle size.
13. The apparatus of claim 12, further including a calibration unit to determine the energy level according to levels based on induced microcavitation using particles of a known size and/or concentration in a liquid insonification medium.
14. The apparatus of claim 10, wherein said transducer comprises a first transducer to produce a cavitation field of said first level and a second transducer to produce a cavitation field of said second level.
15. A device to disperse agglomerates in CMP slurry comprising:
- a reservoir containing CMP slurry, and
 - a transducer to produce a cavitation field within said reservoir, said cavitation field having an intensity sufficient to induce cavitation and disperse agglomerates above a predetermined size.

16. The device of claim 15, further including a detector to detect particle size.
17. The apparatus of claim 15, further including a controller to set an energy level of said cavitation field according to particle size.
18. The apparatus of claim 17, further including a calibration unit to calibrate the intensity according to known energy levels determined by inducing microcavitation using particles of a known size and/or concentration in a liquid insonification medium.
19. The apparatus of claim 15, wherein said transducer comprises a first transducer to detect particles and a second transducer to disperse particles.